10460 – STREET LIGHTING

(Last Revised 3/29/05)

SELECTED LINKS TO SECTIONS WITHIN THIS SPECIFICATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this specification.

B. Section 02200 – EARTHWORK

C. Section 02275 – TRENCHING, BACKFILLING, & COMPACTION OF UTILITIES.

D. Section 02400 – CURB AND GUTTER, DRIVEWAYS, AND SIDEWALKS

E. Section 02920 – SEEDING, SODDING, AND GROUNDCOVER

F. VDOT *Road and Bridge Specifications*, latest revision.

G. AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, latest revision.*

H. City of Fairfax Street Lighting Policy, latest revision.

I. City of Fairfax Erosion and Sedimentation Control Ordinance

1.2 SUMMARY

A. This specification covers signals and traffic management systems and street lighting.

1.3 DEFINITIONS

A. **GENERAL**: For the purposes of this specification, the following definitions refer to signals and traffic management systems and street lighting items that come under the authority of the VDOT or the City of Fairfax as specified within this section and other sections of this manual.

1) **Backplate:** A black plate attached to the perimeter of a traffic signal head for the purpose of improving visibly of signal head lenses when the signal is backlit by the sun.

2) **Loop** (Inductive Detection Loop): A loop conductor placed within a sawed slot in the pavement which provides a signal to the traffic signal controller indicating either the presence of or passing of a vehicle over the loop.

3) **Mast Arm**: A cantilevered steel arm attached to a pole for the purpose of carrying traffic signals, cable, signs, and appurtenances.

4) **Street Lighting**: The illumination of public right-of-way within the City of Fairfax, especially intersections, to assist safe movement of vehicular and pedestrian traffic and illumination of public rights-of-way to discourage criminal acts and help secure public safety.

1.4 SUBMITTALS

A. The contractor shall provide 3 sets of as-built drawings to the City of Fairfax within 30 days of completion of the project. The drawing may be copies of the original Traffic Signal Plan with actual locations sketched in.

1.5 QUALITY ASSURANCE

A. Materials and operations shall comply with the latest revision of all applicable Codes and Standards.

1.6 QUALITY STANDARDS

A. Materials and operations shall comply with the latest revision of the Codes and Standards listed below:

American Society for Testing and Materials

ASTM A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A36	Standard Specification for Carbon Structural Steel
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A595	Standard Specification for Steel Tubes, Low-Carbon, Tapered for Structural Use

1.7 STANDARD ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ANSI	American National Standards Institute, Inc.
ASTM	American Society for Testing and Materials
FS	Federal Specifications
MSDS	Material Safety Data Sheets

MUTCD Manual on Uniform Traffic Control Devices

NEC National Electrical Code

NEMA National Electrical Manufacturers Association

NESC National Electrical Safety Code

UL Underwriters' Laboratories, Inc.

1.8 APPLICATION SPECIFICATIONS

A. National Electric Code (NEC)

B. Virginia Department of Transportation

C. Virginia/Dominion Electric Standard Construction Manual

1.9 PRODUCT DELIVERY, STORAGE AND HANDLING

A. **Handling/Storage**:

1) All manufactured light poles, pole bases, and fixtures shall be delivered to the appropriate City of Fairfax department. No equipment is to be delivered direct to the field from a manufacturer or supplier. Do not store directly on the ground. Set on wooden slats or pallets.

2) Observe NEC and NESC requirements for handling and storage of all electrical wiring, fixtures, etc.

1.10 PROJECT CONDITIONS

A. The Contractor is responsible for obtaining all applicable permits (building permit) making application for service and paying permit fees.

B. If applicable, before commencing construction, Contractor shall obtain a copy of approved encroachment permit and keep on site during construction.

C. Protect structures, utilities, sidewalks, pavements, pavement markings and other facilities, and lawns and existing exterior plants from damage caused by electrical lighting operations.

D. **Safety**: The Contractor shall keep the work area surface in a safe a satisfactory condition during the progress of the work.

1.11 COORDINATION

A. When traffic signals, loops, or their appurtenances are likely to be damaged or interfere as a result of the construction, coordinate temporary operation with the applicable agency having jurisdiction of the signals. Provide a minimum of 48 hours notice prior to anticipated disturbance or interruption.

B. If necessary, coordinate emergency traffic control with the City of Fairfax Police Department and VDOT.

C. Repair of pavement markings: When cuts are made through any paved surface and the cuts extend through the pavement markings, the replaced pavement shall be marked to match the existing.

D. It shall be the responsibility of the Contractor to notify MISS UTILITY at 1-800-552-7001, 48 hours prior to the start of any excavations or construction work. Call the City of Fairfax Public Utilities Department at 703-385-7991 for water/sewer service interruption. After hours, call, 703-385-7924.

Other Private Utilities:

Utility	Company	Phone
Electricity	Dominion Virginia Power	1-888-667-3000
Gas	Washington Gas	1-800-752-7520
Phone	Bell Atlantic/Verizon	703-954-6222
Cable TV	Cox Communication	703-378-8422

E. Protect undisturbed lawns, shrubs, and trees and promptly repair damages caused by operation.

1.12 PUBLIC CONVENIENCE

The Contractor shall at all times so conduct his work as to insure the least possible inconvenience to the general public and the residents in the vicinity of the work. Fire hydrants on or adjacent to the work shall be kept accessible to fire fighting equipment at all times. Temporary provisions shall be made by the Contractor to insure the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by the Public Works Director.

1.13 TRAFFIC CONTROL

A. When working within any City or VDOT System road or highway, conform to the *Manual on Uniform Traffic Control Devices*, latest revision (MUTCD) as well as the VDOT *Road and Bridge Specifications*.

B. Traffic Maintenance shall comply with the latest revision of the VDOT *Standard Specifications for Roads and Structures*, Section 701, *Traffic Signs* and Section 512, *Maintaining Traffic*, as well as other applicable sections.

C. When traffic signals or their appurtenances are likely to be damaged or interfere as a result of the construction, coordinate temporary operation with the VDOT or the Department of Public Works. Provide 48 hours notice prior to anticipated disturbance or interruption.

1.14 WARRANTY

The Contractor shall guarantee his work against defects due to poor workmanship or poor construction for a period of 12 months after completion and acceptance of his work.

PART 2 – PRODUCTS

2.1 SIGNALS AND TRAFFIC MANAGEMENT SYSTEMS

2.2.1 STREET LIGHTING MATERIALS

Materials to be supplied by the contractor:

A. Pole and pole hardware as specified on the plans.

B. Conduit and fittings shall be of the size as shown on the plans.

C. Light Poles (Mast Arm Pole, Strain Pole, Pedestrian Pole, and Wood Pole).

1) **Street Light Arms and Fixtures:** Fixtures shall comply with the City's standard specifications for style and wattage. Street light arms shall comply with the City's standard for length, style, and material. See **Standard Details 407.01, 407.02 and 407.03**.

D. Conduit shall be Schedule 40 PVC except that under driveways, concrete structures, or roadways, galvanized steel conduit shall be used.

E. Grounding wire shall be No. 8 AWG solid copper wire.

F. All junction boxes shall be Quazite Composolite with locking cover.

G. A ground rod shall be installed next to each pole and at electrical service point.

H. Grounding rods shall be 5/8-inch x 8-foot copper clad steel.

PART 3 – EXECUTION

3.1 CONSTRUCTION OF SIGNALS AND TRAFFIC MANAGEMENT SYSTEMS

3.1.1 GENERAL

A. **Signals and Traffic Management Systems**: Signals and Traffic Management Systems shall meet these specifications and the applicable requirements of Section 703, *Traffic Signals* of the VDOT *Road and Bridge Specifications*.

B. The lengths of conduit shown on the plans are approximate lengths. The Contractor shall determine the exact lengths of conduit in the field.

C. The conduit shall be installed in reasonably close conformity with the lines shown on the plans. Conduit runs may be changed to avoid obstructions with the approval of the Public Works Director.

D. It shall be the Contractors responsibility to locate all storm drains, water lines, sanitary sewers, and existing traffic signal equipment and to take all precautions to protect these facilities. The Contractor, at this expense, shall repair any damage caused by the Contractor's operation.

E. In the case of conflict arising between proposed locations of traffic signal equipment and existing utilities, the Contractor shall relocate the traffic signal equipment subject to the approval of the Public Works Director.

3.1.2 CONDUIT INSTALLATION

Conduit shall be schedule 40 PVC in appropriate areas and Rigid Galvanized Steel under driveways, concrete structures, or roadways unless otherwise specified by the Public Works Director. The size of the conduit shall be specified on the Plan.

A. The sum of the bend angles in a single run of conduit shall not exceed 360 degrees.

B. The ends of all conduits, whether shop or field cut, shall be reamed to removed burrs and rough edges. Cuts shall be made square and true so that the ends will butt or come together for the full circumference thereof.

C. Conduit shall be installed using the direct bore method unless otherwise determined by the Public Works Director.

D. Conduit Risers shall be installed on wood utility poles. Conduit shall be attached to the pole with conduit clamps. The Public Works Director shall determine the length of riser. A rain tight entrance cap with plastic wire entry knockouts shall be installed at the top of each riser.

3.1.3 JUNCTION BOXES

Shall be made of a Quazite Composolite material with locking cover.

A. Conduit shall enter the side(s) of the structure at the depth of the conduit run and shall extend a minimum of 2” and a maximum of 4” into the structure.

B. All junction boxes shall be set on a 12” minimum depth bedding of washed gravel (VDOT #57 stone or approved equal).

C. The top of all junction boxes shall be installed flush with the surrounding grade or pavement unless otherwise specified by the Public Works Director.

D. The conduit entrance holes shall be patched such that debris and water cannot enter the structure.

3.1.4 GROUNDING

A. The grounding rod shall be driven into undisturbed earth. The ground wire shall be attached to the ground rod with a ground clamp.

B. The ground wire shall be continuous and unspliced from the ground rod to the lighting pole if applicable.

C. Ground wire shall be #8 AWG solid bare copper wire.

3.1.5 RESTORATION

The Contractor shall restore all areas disturbed by his operation to conditions equal to or better than existing conditions.

3.1.6 CLEANUP

A. Disposal: remove surplus materials, unsuitable soil, trash, and debris and legally dispose of off-site.

END OF DIVISION 10460

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